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1972 1971 1970 1969 1968 1967 1966 1965

Item 20. Other Items of Information.

(1) COPY OF THE INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY (PCT) 7 SHEETS

(2) EXPLANATION OF FIG.1 (in connection with the Laws of
Thermodynamics). 3 SHEETS

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

KARYAMBAS, Nicholas
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NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing
(day/month/year)

15.05.2006

Applicant's or agent's file reference
XXX

IMPORTANT NOTIFICATION

International application No.
PCT/GR2005/000010

International filing date (day/month/year)
12.04.2005

Priority date (day/month/year)
27.04.2004

Applicant
KARYAMBAS, Nicholas

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



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PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference XXX	FOR FURTHER ACTION	See Form PCT/PEA/416
International application No. PCT/GR2005/000010	International filing date (<i>day/month/year</i>) 12.04.2005	Priority date (<i>day/month/year</i>) 27.04.2004
International Patent Classification (IPC) or national classification and IPC INV. F02C1/10 F03G7/10 B81B1/00 F03G7/00		
Applicant KARYAMBAS, Nicholas		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under <u>Article 35</u> and transmitted to the applicant according to <u>Article 36</u>.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> <i>sent to the applicant and to the International Bureau</i>) a total of 1 sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an <u>amendment that goes beyond the disclosure in the international application as filed</u>, as indicated in item 4 of Box No. I and the Supplemental Box. ?</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under <u>Article 35(2)</u> with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand 18.11.2005	Date of completion of this report 15.05.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized officer O'Shea, G Telephone No. +31 70 340-4424	



INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY

International application No.
PCT/GR2005/000010



Box No. I Basis of the report

1. With regard to the **language**, this report is based on

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-11 as originally filed

Claims, Numbers

1, 2 filed with the demand

Drawings, Sheets

1/7-7/7 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☒ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)). ?

- ☐ the description, pages
- ☒ the claims, Nos. 1,2
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1
Industrial applicability (IA)	Yes: Claims	
	No: Claims	1

2. Citations and explanations (Rule 70.7):

see separate sheet

iAP20 Rec'd PCT/PTO 05 JUL 2006

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

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Re Item I**Basis of the report**

1. The amendments filed with the International Bureau under Article 19(1) introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 19(2) PCT. The amendments concerned are the following:

- 1.1 In claim 1, the expressions "flat" and "of considerable length" used in conjunction with the slots (on line 13) replace the originally disclosed "inner" surface.

For the purposes of the examination under Article 33 PCT, it has been assumed that the above amendment did not take place and the original "inner" descriptor applies.

- 1.2 The subject-matter of claim 2, wherein the pressure of the gas during phase (0---1) and the temperature during isobaric expansion are further specified.

This report has been drawn up as if this amendment did not take place (i.e. claim 2 has been disregarded).

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:
D1: US-A-5 316 568 (BROWN ET AL) 31 May 1994
D2: WO 94/20741 A (KIM, JAE, HWAN) 15 September 1994
2. The application does not meet the requirements of Article 6 PCT, because claim 1 is not clear. Claim 1 is directed to a device, however, as explained below, some of the features in this claim relate to a method of using this device rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.

Expressions, amongst others, such as "uses rarefied gas" (line 4), "producing work" (line 7), "expanding gas is reheated" (line 9), "phase (0---1) is accomplished

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REPORT ON PATENTABILITY
(SEPARATE SHEET)**

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when.." (line 11) and "achieving an aggregated output" (line 20), deal with how such a device of claim 1 is operated and do not serve to clearly limit the subject-matter of this device in terms of its structural features. For the purposes of assessing whether or not the subject-matter of claim 1 meets the requirements of Article 33 PCT, the wording of the claim has been interpreted in terms of its structural features, as outlined in section 3 below.

3. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

A device for converting thermal energy into kinetic energy (see figures 18 and 20), said device using a rarefied gas (col.14, lines 3-15) as the working fluid and comprising:

a vessel divided by a region (92) containing microscopic slots (12) (col.4, lines 48-50 the fact that the pore openings can be rectangular or oval in shape allows them to be interpreted as slots) with sizes comparable to the mean free path of the molecules (col.4, lines 26-28) of the gas, said microscopic slots having diverging inner surfaces (col.4, lines 41-44) and forming slots grouped together in small parallel modules (see figure 2), said microscopic slots having a molecular layer adsorbed upon said inner walls (col.6, lines 34-45);

a gas turbine (96,104) which performs adiabatic expansion on the gas;

a heat exchanger (106) located downstream of the gas turbine (96,104) to provide heat energy to the gas flow.

The subject-matter of claim 1 therefore differs from this known device in that the heat exchanger transfers heat from the ambient air to the working fluid.

The provision of a heat exchanger to transfer heat energy from the ambient air to the working gas flow is well-known in the field of closed circuit turbines (see for example document D2, page 15, lines 2-11). The skilled person would therefore regard the use of such a heat exchanger in the device according to claim 1 as obvious and a matter of normal design procedure.

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4. Although the skilled person could produce a device having the features of claim 1, the description does not disclose the device in a manner which would enable it to work as described (Article 5 PCT), as such functioning would seem to be in contravention of well-established physical laws. In the present case, the second law of thermodynamics would seem to be violated by such a device, as it is alleged that such a device continuously produces energy and provides refrigeration without needing any external heat source, apparently a Perpetual Motion Machine of the Second Kind. It is therefore doubtful that such a device could be used as described, leading to the subject-matter of claim 1 lacking industrial applicability (Article 33(4)PCT)(see also PCT Guidelines 14.06).